824.30	Flashing Warning Beacon Type B	Lump Sum
824.40	Flashing Warning Beacon Type C	Lump Sum
824.50	Flashing Warning Beacon Removed and Reset	Lump Sum
824.51	Flashing Warning Beacon Removed and Stacked	Lump Sum
824.60	Highway Warning Sign - Illuminated	Each
824.61	Highway Warning Sign - Illuminated	Lump Sum
824.70	Highway Warning Sign - Illuminated Removed and Reset	Lump Sum
824.71	Highway Warning Sign - Illuminated Removed and Reset	Lump Sum
824.72	Highway Warning Sign - Illuminated Removed and Transported	Lump Sum
824.80	Lighted Barrier Arrows	Each
824.81	Lighted Barrier Arrows	Lump Sum
824.90	Lighted Barrier Arrows Removed and Reset	Lump Sum
824.91	Lighted Barrier Arrows Removed and Reset	Lump Sum
824.92	Lighted Barrier Arrows Removed and Transported	Lump Sum
824.93	Lighted Barrier Arrows Removed, Transported and Reset	Lump Sum

SECTION 828

TRAFFIC SIGNS

DESCRIPTION

828.20 General.

The provisions of this section shall apply to the fabricating, furnishing and erecting warning clusters and signs, overhead and roadside guide signs, warning and regulatory signs, route and project markers and supports for delineators and markers.

Traffic Signs are officially erected devices, mounted on fixed or portable supports, whereby specific messages are conveyed by means of words or symbols, for the purpose of regulating, warning or guiding traffic.

The signs, foundations and supports shall be fabricated and erected in conformity with the following:

A. Manual on Uniform Traffic Control Devices (Current Edition) hereinafter referred to as MUTCD.

B. The AASHTO publication entitled “Specifications for Design and Construction of Structural Supports for Highway Signs, Luminaries and Traffic Signals” (Current Edition).

C. The Massachusetts Highway Department ”Construction Standards”.

828.21 Plans.

The Contractor shall develop plans for the foundations, structural supports and sign panels, including the spacing of panels, except for the designs shown as typical on the standard drawings and plans. The message and size of legend for sign panels shall be as specified by the Department.

MATERIALS

828.40 General.

Materials shall meet the requirements specified in the following Subsections of Division III Materials:

Reflective Sheeting	M9.30.0
Acrylic, Prismatic Reflectors and Embossed	M9.30.3
Aluminum Frames for Signs Acrylic Plastic Reflector Type “A”	M9.30.4
Demountable Reflectorized Delineator-Guard Rail	M9.30.7

Reflectorized Flexible Delineator Post M9.30.8

828.41 Reflective Sheeting.

Reflective sheeting shall meet the requirements of Section M9.30.0.

A. Panel Sheeting - Type III or IV (High-Intensity)
B. Legend Sheeting - Type III or Type IV(High Intensity)
C. Channelizing Sheeting - Type VI (Flexible High-Intensity)

828.42 Panels.

A. Aluminum Sign Panels.

Aluminum sign panels shall be either Type A or Type B. Sign supporting hardware shall be aluminum or stainless steel.

Aluminum Sign Panels (Type A)

Type A Panels shall be fabricated from flat sheet Aluminum Alloy of the following types:

A-1 – Flat sheet aluminum sign panels shall be fabricated from aluminum sheeting, ASTM B 209, Alloy 6061-T6 or Alloy 5052-H38 of the following thickness and mounting unless otherwise specified.

Area (square meters)	Mounting	Thickness (millimeters)
Up to 1	Single Post	2
Over 1 to 2	Two Posts	2
Over 0.5 to 2	Single Post (Top Mounted)	6

A-2 – Flat sheet sections with extruded tabs shall be fabricated from:

1. Sheeting 3.18 millimeters thick, ASTM B209, Alloy 3033-H18.
2. Extruded parts ASTM B 221, Allow 6063-T6.

A-3 – Flat sheet sections with welded or flush riveted locking tabs and clips shall be fabricated from:

1. Flat sheet ASTM B 209, Alloy 6061-T6 or Alloy 5052-H38.
2. Extruded parts as specified by the Manufacturer.

Aluminum Sign Panels (Type B)

Type B Panels shall be fabricated of extruded Aluminum ASTM B221. Alloy 6063-T6 shall be 3.18 millimeters thick, 300 millimeters wide and of bolted joint design. Only one 150 millimeter panel shall be used where the overall height of a sign requires one panel less than 150 millimeters.

B. Route Markers and 300 Millimeter Warning Clusters (H1-2).

These items on aluminum panels shall be fabricated from aluminum sheeting ASTM B209, Alloy 6061-T6 or Alloy 5052-H38 2 millimeters thick of the size shown on the plans.

Route marker overlay on directional sign panels may be fabricated from Aluminum Alloy 5052-H3802 millimeters thick.

Material for attachment shall conform to the following specifications:

Part	**Aluminum: ASTM**	**Stainless Steel: AISI**
Bolts	B211 6061-T6 Alloy	Type 304 or 305
Rivets	B316 6061-T6 Alloy	Type 304 or 305
Nuts	B211 6061-T6	Type 304 or 305
Washers	B209 Alclad 2024-T4	Type 304 or 305

828.43 Legends (Types A, B, C and D).

The type of legend shall be as specified and shown on the plans except as follows:

a. State and U.S. Route Markers shall have Type D Silk Screen Processed Legends.

b. Interstate Route Markers on Guide Signs on Feeder roads shall have Type C Permanently Applied Legends.

c. Individual Interstate Route Markers shall have Type C Permanently Applied Legends with the required Silk Screen Processed Legend superimposed thereon.

d. Individual Interstate Route Markers and Overhead Signs shall have Type B Permanently Applied Legends.

Finish legends shall show careful workmanship and be clean-cut and sharp.

A. Legend Type A – Demountable Flat.

Legends shall be reflective or opaque sheeting as specified conforming with the photometric and other requirements of Subsection 828.41. Legends shall be applied to sheet aluminum in a manner specified by the sheeting manufacturer.

Base material shall be of sheet aluminum ASTM B 209, Alloy 3003 H14.

Demountable legends shall be of sheet aluminum, those up to and including 300 millimeters in height shall be 1 millimeter in thickness; those over 300 millimeters in height shall be 1.6 millimeters in thickness.

B. Legend Type B – Demountable Prismatic Reflectors.

Reflective letters, numerals, symbols and borders shall consist of embossed aluminum frames fitted with circular plastic prismatic reflex-reflectors.

The reflectors shall meet the requirements of Subsection M9.30.3.

C. Legend Type C – Permanently Applied Legend.

Legends shall be reflective or opaque sheeting applied directly to a clean, dust-free background in a manner specified by the sheeting manufacturer.

Legends shall be cut neatly at intersect on panel edges.

Heat activated adhesive-coated material shall be applied only by mechanical means.

Finish shall be as specified in Subsection 828.51B.

D. Legend Type D – Silk Screen Processed.

The legends and shields shall be of the series and size specified in the AASHTO Manual for "Signing and Pavement Markings" (Current Edition), and the dimensions, details of the letters with respect to each series as specified in the FHWA publication: "Standard Alphabets for Highway Signs" (Current Edition), or as specified and shown on the plans.

828.44 Demountable Reflectorized Delineators.

A. Type "A" Acrylic Plastic Reflector.

The reflector shall conform to Subsection M9.30.4.

B. Type "B" Reflective Sheeting Reflector (Wide Angle).

The silver-white #2 and yellow (amber) reflectors shall be of adhesive coated reflective sheeting permanently adhered to a sheet aluminum backing. The reflective sheeting shall meet the requirements of Subsection M9.30.0.

The sheet aluminum backing shall be ASTM B 290 Alloy 6061-T6 or Alloy 5050-H38, 1 millimeter in thickness properly degreased and etched or treated with a light tight amorphous chromate type coating.

1. Photometric Requirements.

See Subsection 828.41 (Legend Sheeting).

828.45 Reflectorized Flexible Delineator Posts.

Reflectorized Flexible Delineator Posts shall meet the requirements of Subsection M9.30.8.

828.46 Delineation for Guard Rail Termini

Delineators for Guard Rail Termini shall meet the requirements of Subsection M9.30.10.

FABRICATION

828.50 General.

Sign fabrication shall be done in a plant properly equipped for the production of the types of signs specified.

Sign panels shall show careful workmanship and present a reasonably plane surface with the message and outlines clear and sharp.

Finished sign panels shall be shipped in such manner as to ensure arrival on the project in an undamaged condition, where they shall be properly protected from dirt, scratches, hand-marks and other blemishes until erected and accepted.

828.51 Reflective Sheeting.

A. Application.

Reflective sheeting shall be applied to properly treated base panels with mechanical equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. Heat activated adhesive coated sheeting shall be pre-perforated.

Sign faces, comprising two or more pieces or panels of reflective sheeting, must be carefully matched for color at the time of sign fabrication to provide uniform appearance and brilliance both day and night. Alternate, successive width sections of either sheeting or panels must be reversed and consecutive, to insure that corresponding edges of reflective sheeting lie adjacent on the finished sign. Nonconformance may result in nonuniform shading and an undesirable contrast between adjacent widths of applied sheeting, which will not be acceptable.

Pressure sensitive adhesive coated sheeting shall be overlapped at splices not less than 5 millimeters. Heat activated adhesive coated sheeting may be spliced with overlap not less than 5 millimeters or butted, gap not to exceed 1.0 millimeter. Only butt splices shall be permitted on signs screen-processed with transparent color. Sheeting applied to extruded sections shall extend over top edges and down side legs a minimum of
2 millimeters. No splices shall be allowed on sign panels 2 square meters or under. For D6 guide sign panels over 2 square meters, splices shall be avoided; however, a maximum of one splice is allowed if necessary.

B. Finish (Protective Coating).

1. When pressure sensitive adhesive coated reflective sheeting is used all sheeting splices and sign edges shall be sealed with materials recommended by and in a manner specified by the sheeting manufacturer.

2. Dry heat activated adhesive coated reflective sheeting when applied to aluminum or high-density plywood shall be edge sealed as specified by the sheeting manufacturer.

828.52 Panels.

White numerals 25 millimeters in height, designating the size of sign panel, date of fabrication, fabricator, manufacturer and type of sheeting shall be affixed at the bottom left rear corner of all ground mounted guide, historical, cultural, recreational and specific information service signs.

All other ground mounted signs shall have black numerals 13 millimeters in height, designating the size of sign panel, date of fabrication, fabricating manufacturer and type of sheeting affixed to the bottom left rear of each panel.

White numerals 40 millimeters in height, designating the size of sign panel, date of fabrication, fabricator, manufacturer and type of sheeting shall be affixed at the bottom left corner of the face of each overhead sign panel.

The code numbers of fabricators and manufacturers will be obtained from the Department Bureau of Transportation Planning and Development Systems Operations Unit.

Black numerals shall be used in place of white numerals where the background they are affixed to is white or aluminum.

Panel surfaces upon which reflective sheeting is to be applied shall not be painted.

The painting of traffic signs, if required, shall conform to the following:

a. Aluminum signs shall be treated by solvent cleaning and a wash coat of basic zinc chromate-vinyl butyral (M7.04.10).

b. After pre-treatment as specified above, the faces if required, backs, and all exposed edges of the signs shall be given a prime coat of enamel primer conforming with Federal Specifications TT-P-636.

c. After priming, the face side of all signs requiring painted backgrounds shall be given two color coats of enamel conforming to Subsection M7.03.02.

d. The backs and exposed edges of plywood sign panels shall be given one coat of color enamel matching that specified for the background of the sign face, same to conform with the foregoing paint specifications.

e. Bolt heads on the face of sign panels shall be primed as designated in 828.52 "c" above to accept a permanent coat of matching paint.

Fabricated sections with extruded legs shall be manufactured in accordance with the typical detail plans. The face shall have a reasonably plane surface free from protrusions and depressions.

Panels shall be composed in increments 1.2 meters wide. Panels less than 1.2 meters wide shall be composed of one sheet. Signs greater than 1.2 meters shall have no more than 2 sheets less than 1.2 meters wide.

Sheet increments shall be continuous from top to bottom of sign panel. No horizontal joints will be permitted. Panel assembly shall include all fasteners and backing strips also fabricated from aluminum sheeting ASTM B 209, Alloy 6061-T6.

Backing strips shall be provided at every joint and held firmly in place with proper fasteners as recommended by the manufacturer. Caution shall be used in assembly to prevent any projections, dents or gouging of the panel face. The corners of signs shall be rounded to a radius equal to the minimum dimension of the sign except that a minimum corner radius of 300 millimeters shall be used, unless otherwise noted on the plans.

Route markers shall be attached to aluminum sign panels with aluminum or stainless steel 6 millimeter diameter slotted-head bolts with nuts and washers or 6 millimeter diameter rivets.

Treatment of Aluminum Sign Panels Prior to Application of Reflective Sheeting.

1. Degreasing.
   a. Vapor degreasing: by total immersion of the panel in a saturated vapor or trichloroethylene. Trademark printing shall be removed with lacquer thinner or controlled alkaline cleaning system.
   b. Alkaline degreasing: by total immersion of the panel in a tank containing alkaline solution, controlled and titrated to the solution manufacturer's specification.
2. Rinsing. After satisfactory degreasing, the panels shall be thoroughly washed with running water.
3. Drying. The panel shall be thoroughly dried by use of a forced hot air dryer.
4. Metal shall not be handled between cleaning and etching operation and the application of reflective sheeting, except with devices or clean canvas gloves.
5. Metal shall not come in contact with greases, oils or other contaminants prior to the application of reflective sheeting.

Panels for Warning Cluster (H1-2).

Panels shall be attached to the posts with standard bolts as specified on the plans. The panels shall have one coat of primer and two coats of paint conforming to Subsection M7.03.02 of Division III, Materials, and shall be protected prior to painting in accordance with the manufacturer's recommendations.

828.53 Legends.

A. Type A.

The letters, numerals, symbols and borders shall be attached to the sign background as specified in Subsection 828.52.

B. Type B.

The reflectors shall be affixed to the aluminum frames by an approved method to prevent loosening. The use of tape to hold reflectors in place will not be permitted.

Reflector size shall be determined by the dimensions of the legend and spaced 1-1/2 diameters on center and 1/2 diameter from the edge of the letters.

After fabrication, the aluminum shall be properly degreased and etched, then treated with a light, tight, amorphous chromate type coating. All units shall have an embossed height of approximately 3 millimeters.

Embossed aluminum frames, following amorphous chromate coating, shall be primed and enameled with high quality synthetic baking primer and white or black enamel.

Each letter, numeral, symbol and border shall be supplied with mounting holes and shall be secured to the sign surface with aluminum or stainless steel screws or rivets. Mounting holes shall be spaced as required under Subsection 828.52.

C. Type C.

See Subsection 828.43-C.

D. Type D.

The legends shall be applied by the Silk Screen Process or by using cutouts from an approved type black film

superimposed on reflective sheeting.

The flexible black gloss silk screen ink shall conform to the manufacturer's recommendations.

828.54 Demountable Reflectorized Kilometer and Tenth-of-Kilometer Markers.

A. The kilometer marker panels shall be fabricated from aluminum sheeting conforming to ASTM B 209, Alloy 6061-T6 or Alloy 5052-H38 and 2 millimeters in thickness. They shall be 200 millimeters wide and of a length required to display the number of numerals shown on the plans.

The green reflective sheeting shall conform to the requirements of Section 828.41.

The silver-white numerals shall be Type C "permanently applied" as specified under Subsection 828.43-C.

B. The aluminum panel for tenth-of-kilometer marker shall be 100 millimeter x 100 millimeter diamond shape as shown on the plans. The sheeting and legend shall conform to the applicable requirements of Subsection 828.41 and Subsection 828.43 and the following:

The panel shall be fabricated from aluminum sheeting conforming to ASTM B 209, Alloy 6061-T6 or Alloy 6052-H38 and 1.6 millimeters in thickness, properly degreased and etched or treated with a light, tight, amorphous chromate-type coating. The panel shall be punched or sheared to size, with 6 millimeter radius corners having two square or round 6 millimeter mounting holes. Mounting holes shall be spaced on 100 millimeter centers so as to present a diamond-shape when installed.

The reflective sheeting shall conform to Encapsulated Lens Reflective Sheeting in accordance with Subsection 828.41.

The reflective sheeting shall be applied to properly treated base panels with mechanical equipment in a manner specified by the sheeting manufacturer.

The numerals shall be Type D, black, die-cut, pre-spaced, conforming to the FHWA Standard Series. Numerals shall have a pre-coated, pressure-activated adhesive and applied as recommended by the manufacturer of the reflective sheeting or be opaque black 3M permanent inks applied on approved high intensity sheeting, Type III.

828.55 Hazard Markers.

A. H1-1 Demountable Reflectorized Hazard Marker.

The attaching of the backplate to the P-9 post shall conform to the following requirements:

Two rivets, each consisting of pin and collar, shall be used to attach the marker to the post. The collar shall be cold-swaged into annular locking grooves on the pins by a method recommended by the manufacturer.

Pin rivets shall be 4.75 millimeters diameter of aluminum ASTM B 316, Alloy 2024-T4; collars shall be 4.75 millimeters diameter of aluminum ASTM B 209, Alloy 6061-T4 with a minimum washer face of 13 millimeter diameter. The pin rivets shall have truss heads and grip range of 25 millimeters $\pm$ 1.6 millimeters.

B. H1-2 Warning Cluster.

Fabrication shall conform to Subsection 828.51.

C. H1-3 Abutment Warning Panels.

The stripes shall be alternate yellow and black. The yellow stripes shall be reflectorized as required under "Reflective Sheeting," Section 828.41. Black paint shall conform to the requirements of Subsection M7.03.02.

828.56 Demountable Reflectorized Delineator.

A. Type A.

Housings shall be of aluminum ASTM B209, Alloy 5052-H-38, 0.50 millimeter thickness, formed to encase a reflector having a minimum diameter of 75 millimeters and be 6.0 millimeters in depth to retain the acrylic reflector. Housing shall be provided with four embossed circular reinforcement ribs and marked with name and part number of the manufacturer.

Aluminum grommets of 4.75 millimeters inside diameter shall be expanded within the reflector mounting holes to accommodate 4.75 millimeters aluminum ASTM B 316, Alloy 2024-T4 bolts.

The aluminum housings shall be free from buckles, warps, burrs, corrosion, white rust and dirt.

B. Type B.

The reflective sheeting shall be pre-coated with either a pressure sensitive adhesive (Type I), or a tack-free adhesive (Type II) designed for mechanical application to properly prepared surfaces only when activated by heat. The

sheeting shall adhere securely at temperatures of -35 °C to +95 °C and be elastic enough at low temperatures to resist shock when struck at -25 °C without an appreciable decrease in adhesion, vandal resistant and strong enough to resist peeling from the surface. The pre-coated adhesive shall have no staining effect on the reflective sheeting and must be mildew resistant.

The reflective sheeting shall be mechanically applied in the manner and with equipment prescribed by the sheeting manufacturer.

The reflective material when processed shall be in accordance with Subsection 828.41.

The sheeting surface shall be such that it may be readily refurbished by cleaning in accordance with the manufacturer's recommendations.

C. Demountable Reflectorized Guard Rail Delineators.

Demountable reflectorized delineators shall conform to M9.30.7.

828.57 Reflectorized Flexible Delineator Posts.

Shall be installed in accordance with the manufacturer's recommendations at locations indicated on the Plans and/or as directed.

828.58 Demountable Reflectorized Station Markers and Project Markers.

The panels shall be fabricated from aluminum sheeting conforming to ASTM B 209, Alloy 6061-T6 and shall be 1.6 millimeters in thickness. They shall be 100 millimeters wide and of a length required to display the station numerals or Federal-aid Number shown on the plan.

The reflective background sheeting attached to the aluminum sheeting shall conform to the requirements of Subsection 828.41. The color of the background sheeting shall be orange for Beginning and End project markers and white for intermediate Station project markers.

The panel shall be punched or sheared to size, with 20 millimeter radius corners, having two square or round 6 millimeter mounting holes.

The numerals shall be Type D, black, die-cut, pre-spaced conforming to the FHWA Standard Series
40 millimeters C. Numerals shall have a pre-coated pressure activated adhesive and be applied as recommended by the manufacturer of the reflective sheeting.

ERECTION

828.60 General.

Warning clusters (H1-2) shall be mounted on one standard P-5 breakaway post assembly. The reflectors shall be amber (Type A), conforming to the requirements of Subsection 828.44-A.

Abutment warning sign (H1-3) shall be constructed of aluminum panel (Type A) as specified. Posts shall be one standard P-5 breakaway assembly, conforming to Department standards.

Demountable reflectorized project markers shall be fabricated and erected as shown on the plans and/or as directed by the Engineer.

Demountable reflectorized kilometer and tenth-of-kilometer markers shall be mounted on new P-9 Steel posts or on existing posts as shown on the plans and as directed.

Demountable reflectorized hazard marker (H1-1) shall be mounted on a standard P-9 post. The reflectors shall be yellow (amber) (Type A) as specified under Section 828.44-A unless otherwise noted in the Special Provisions.

Demountable reflectorized guard rail delineators shall be attached to the bolts located in the valley of the guard rail beam at the spacings as follows:

1. Delineators are to be installed on every tenth (10th) guard rail post. In guard rail runs of less than ten (10) posts two (2) delineators shall be used, one (1) at either end.
2. On curves delineators will be spaced at a minimum of every third (3rd) guard rail post based on the degree of curve. No less than three (3) delineators shall be visible at normal viewing distance from the travel lane adjacent to the guard rail section.
3. Leading and trailing ends at bridges – three (3) delineators: one (1) at the connection of the terminal: the connector and 7.62 meter plate; one (1) at the middle of the 7.62 meter plate; and one (1) at the connection of the 7.62 meter plate and the normal guard rail panel.

4. In no instance shall delineators be installed on sections of guard rail which deviate substantially from the alignment (vertical or horizontal) of the roadway or which are located more than 2.5 meters from the edge of the paved surface.

5. Exceptions and/or modifications to the above shall be made only with the approval of the Engineer in the field.

When roadway alignment permits, the reflector portion of each delineator shall be positioned so that it will be clearly visible for a distance of 300 meters under normal weather and atmospheric conditions when illuminated by the high beam of standard automobile headlights on vehicles in the lane adjacent to the delineator.

Delineation for Guard Rail Termini shall be mounted within 150 millimeters perpendicular to the web of the first and last full height guard rail posts in a section of guard rail.

828.61 Attachment to P-9 Posts.

Demountable Reflectorized Kilometer, Tenth-of-Kilometer, and Project Markers, and Delineation for Guard Rail Termini shall be attached to the P-9 posts by a connection fabricated as follows:

Two rivets, each consisting of pin and collar, shall be used to attach the marker to the post. The collar shall be cold-swaged into annular locking grooves on the pins by a method recommended by the manufacturer.

Pin rivets shall be 4.75 millimeter diameter of aluminum ASTM B 316, Alloy 2024-T4, collars shall be 4.75 millimeter diameter aluminum of ASTM B 209, Alloy 6061-T4 with a minimum washer face of 13 millimeters diameter. The pin rivets shall have truss heads and grip range of 25 millimeters ± 1.6 millimeters.

An approved two piece rivet type sign fastener installed by expanding the blind rivet component inside the semi-tubular rivet component may be used.

When demountable reflectorized tenth-of-kilometer marker (excluding post) is specified, the marker shall be attached to existing delineator post. The existing delineator reflectors may be removed or retained as directed.

COMPENSATION

828.80 Method of Measurement.

The quantity of Overhead Guide Signs, Roadside Guide Signs, Warning Signs, Regulatory Signs and Route Markers (Shields) shall be the actual total number of square meters of panel in each sign classification.

The area of Route Markers when attached to destination sign panels will not be added to the total area of panels.

Demountable Reflectorized Hazard Marker (H1-1) will be measured by the unit including P-9 post complete in place.

Each Abutment Warning Sign with 1 Breakaway P-5 Post Assembly shall be considered as one unit.

Each Warning Cluster mounted on one P-5 Breakaway Post Assembly shall be considered as one unit.

Demountable Reflectorized Kilometer Marker, Tenth-of-Kilometer Marker with P-9 Post and Tenth-of-Kilometer (excluding post) will be measured by the respective unit complete in place.

Demountable Reflectorized Delineators shall be measured by the unit, complete in place, with P-9 post or bracket.

Demountable Reflectorized Project Marker including P-9 Post (where applicable) will be measured by the unit complete in place.

Reflectorized Flexible Delineator Posts will be measured by the unit complete in place.

Delineation for Guard Rail Termini will be measured by the unit each including the P-9 post complete in place.

828.81 Basis of Payment.

Payment for each classification of sign panels will be made at the contract unit price per square meter which shall be full compensation for fabricating, furnishing, erecting and attaching the completed sign panel, preparing all reflectorized materials, backgrounds, legends, borders, arrows, shields, paints, hardware and all other materials and labor required for the completion of the signs as specified.

Demountable Reflectorized Hazard Marker (H1-1) will be paid for at the contract unit price each complete in place.

Payment for Abutment Warning Panels will be made at the contract unit price each complete in place.

Payment for Warning Clusters will be made at the contract unit price each complete in place.

Demountable Reflectorized Kilometer Marker with P-9 Post, Tenth-of-Kilometer Marker with P-9 Post and Tenth-of-Kilometer Marker (excluding post) will be paid for at the contract unit price each complete in place.

Demountable Reflectorized Delineators will be paid for at the contract unit price each complete in place.

Demountable Reflectorized Project Marker with P-9 Post (where applicable) shall be paid for at the contract unit price each complete in place.

Reflectorized Flexible Delineator Posts will be paid for at the contract unit price each complete in place.

Delineation for Guard Rail Termini will be paid for at the contract unit price each complete in place.

828.82 Payment Items.

827.21	600 millimeter Warning Cluster (H1-2) - Aluminum Panel (Type A)	Each
827.22	900 millimeter Warning Cluster (H1-2) - Aluminum Panel (Type A)	Each
827.31	Abutment Warning Sign (H1-3) - Plywood Panel	Each
827.33	Abutment Warning Sign (H1-3) - Aluminum Panel (Type A)	Each
828.1	Overhead Guide Sign - Aluminum Panel (Type B)	Square Meter
829.1	Roadside Guide Sign - (MR) - Aluminum Panel (Type B)	Square Meter
830.1	Roadside Guide Sign - (FR) - over 2.25 square meters - Aluminum Panel (Type B)	Square Meter
831.1	Roadside Guide Sign - (FR) - 2.25 square meters and under - Aluminum Panel (Type A)	Square Meter
832.1	Warning - Regulatory and Route Marker - Aluminum Panel (Type A)	Square Meter
833.1	1-WH Demountable Reflectorized Delineator (H1-4)	Each
833.11	1-AM Demountable Reflectorized Delineator (H1-8)	Each
833.2	2-WH Demountable Reflectorized Delineator (H1-7)	Each
833.3	2-AM Demountable Reflectorized Delineator (H1-5)	Each
833.4	3-AM Demountable Reflectorized Delineator (H1-6)	Each
833.5	Demountable Reflectorized Delineator - Guard Rail	Each
833.7	Delineation for Guard Rail Termini	Each
834.	Demountable Reflectorized Kilometer Marker	Each
834.1	Demountable Reflectorized Tenth-of-Kilometer Marker	Each
834.11	Demountable Reflectorized Tenth-of-Kilometer Marker (Excluding Post)	Each
834.17	Reflectorized Flexible Delineator Post (Amber)	Each
834.18	Reflectorized Flexible Delineator Post (White)	Each
835.	Demountable Reflectorized Hazard Marker (H1-1)	Each
836.	Demountable Reflectorized Project Marker with P-9 Post	Each
836.1	Demountable Reflectorized Project Marker (Excluding Post)	Each
836.5	Demountable Reflectorized Station Marker with P-9 Post	Each
836.6	Demountable Reflectorized Station Marker (Excluding Post)	Each

SECTION 840

SIGN SUPPORTS

DESCRIPTION

840.20 General.

The work to be done hereunder consists of the fabrication and erection of steel structural supports on 30 MPa - 40 mm - 335 kg Cement Masonry Foundations.

The Contractor may select any structural sign support system meeting the design criteria of AASHTO “Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals” (Current Edition) unless otherwise standardized by the Department. Acceptance of the structural sign supports system will be contingent upon the